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ABSTRACT

The content validation method was used to develop a scale for measuring attitudes toward and knowledge about the Acquired Immune Deficiency Syndrome (AIDS) for college students. The developed instrument, the Attitudes toward AIDS Scale (ATAS) consisted of a knowledge scale and an attitudes scale, each with 25 items chosen by a pool of AIDS educators and researchers. Subjects for an internal consistency reliability study were 320 college students (166 undergraduate students and 154 graduate students) in a large university on the East Coast. Fifty-two of the undergraduates participated in a test-retest reliability study. Results indicate that both scales of the ATAS have adequate internal consistency and test-retest reliability. The ATAS provides an adequate instrument for conducting AIDS research and evaluating the effectiveness of AIDS education and prevention effects. Three tables present study findings. There is a five-item list of references. An appendix lists the 50 item statements that comprise the ATAS. (SLD)

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The Development and Reliability of the Attitudes Toward AIDS Scale

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Abstract

The content validation method was used to develop a scale for measuring attitudes toward and knowledge about AIDS (Acquired Immune Deficiency Syndrome) for college students. High internal consistency and test-retest reliabilities were reported. Potential uses of the scale were discussed.

The increasing prevalence of Acquired Immune Deficiency Syndrome (AIDS) continues to raise widespread concerns in the 1990s. The December 1991 HIV/AIDS Surveillance report issued by the Center for Disease Control gave a total of 202,483 formally diagnosed and reported AIDS cases in the United States. In addition, it has been commonly estimated that more than 1.5 million individuals have been infected by the HIV virus (Jones, 1990). Researchers expect the prevalence of AIDS continue to escalate in the next decade. Since there is so far no cure or vaccine for this devastating disease, AIDS education has been promoted nationwide as a major means for the control and prevention of this epidemic. In the meanwhile, psychosocial research on AIDS is also emerging in increasing numbers during the past several years. Critical to these AIDS education and research efforts are reliable and valid instruments to measure knowledge of and attitudes towards AIDS, among other variables. A review of available literature showed college students has been one of many major populations targeted by AIDS education and research efforts (i.e., Krupka & Vener,

1988; Thomas, Gilliam, & Irwey, 1989). However, few adequate instruments with established reliability and validity are available for use with this population. Therefore, the purpose of the present study was to develop a psychometrically sound instrument which can be used to objectively and accurately measure college student's knowledge about and attitudes toward AIDS for various purposes.

Method

Development of the instrument

The developed instrument was named the Attitudes Toward AIDS Scale (ATAS). The ATAS consists of two parts: a knowledge scale and an attitudes scale, each containing 25 items. The knowledge scale uses a true-false format. It was designed to tap common knowledge about AIDS in areas of prevalence of AIDS, medical facts about AIDS, modes of transmission, misconceptions about AIDS, and prevention of AIDS. Typical items on the knowledge scale are "The virus that causes AIDS is call Human Immunodeficiency Virus (HIV)", "One can get AIDS by sharing a meal with a person who has AIDS", etc. The attitudes scale, on the other hand, uses a 5-

point Likert-type rating format (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree). The content of the scale involves affective reactions to AIDS as a disease, to HIV/AIDS infected persons, and to AIDS related issues. Typical items on the scale are "I would feel embarrassed if one of my family members had AIDS", "An employee who has AIDS should not be allowed to work", etc.

In developing the ATAS, an initial pool of 150 item statements (75 on knowledge about AIDS and 75 on attitudes toward AIDS) were first generated. The item statements were developed through a review of a wide range of AIDS literature, of which a major portion was designed for college students or the general public (i.e., AIDS education curricula, college policies on AIDS, brochures and other public information materials distributed by the Center for Disease Control, state Departments of Health, professional organizations, etc.). Next, three AIDS educators and researchers were asked to rate the adequacy of the items as measures of knowledge of and attitudes toward AIDS. The 40 items from each item pool rated most consistently as related

to the two respective domain areas (knowledge and attitudes) were selected for the preliminary scales. The preliminary scales were then administered to a group of college students (n=48) for field testing purpose. Based on the analysis of this field testing data, 15 items with the most extreme (high or low) difficulty levels on the knowledge scale and 15 items with the least variance on the attitudes scale were eliminated. The remaining 25 items in each item pool were retained for the formal scale. As a final step, careful editing was done to ensure clear and non-equivocal wording of the items. In addition, the items on each scale were carefully structured to include both positive and negative polarity. A list of the ATAS item statements can be seen in the Appendix.

Sample

The subjects for the internal consistency reliability study were 320 college students in a large university in the east cost. The sample consists of 166 undergraduate and 154 graduate students. There were 68 males and 98 females in the undergraduate subsample and 70 males and 84 females in the graduate subsample.

Fifty two students from the undergraduate sample were also used in the test-retest reliability study. There were 26 males and 26 females in this group.

Procedure

The ATAS may be administered in either individual or group format. The administration time is about 15-20 minutes. In the present study, the ATAS was administered to the subjects in small groups. In all administrations, the subjects were told that the ATAS has two different parts, each containing 25 statements. The items measures what a person knows about AIDS as well as how does the person feel about the disease and some AIDS related issues. The subjects were asked to give their most appropriate answers on each part of the scale. Part I (attitudes Scale) was then administered first to the subjects, followed by Part II (Knowledge Scale). This same order was used with all subjects. This was done in the consideration that for some subjects answering the knowledge items first might affect their responses on the attitude items. The instructions provided on the attitudes scale was as follows: "Please respond to the following items on a 5-

category rating scale. Circle the appropriate rating following each item to indicate your response. Use the key below when selecting your ratings: SA = Strongly Agree, A = Agree, N = Neutral, D = Degree, SD = Strongly Disagree." Likewise, a separate instruction appeared on the knowledge scale, "Please answer the following items using a true or false format. Circle T if you believe the statement is True, and F if you believe it's False."

The ATAS knowledge scale was scored by totaling the number of items answered correctly by the subject. The higher the score, the higher degree of knowledge of AIDS is indicated. For the attitudes scale, points of 5, 4, 3, 2, 1 were assigned to "strongly agree," "agree," "no opinion," "disagree," and "strongly disagree" for positively stated items, while the reverse was used with the negatively stated items. The total number of points a subject received was his/her score on the scale. The higher the score, the more appropriate/accepting the attitudes held by a subject toward AIDS.

Results and Discussion

Means and SDs for the attitudes and knowledge scales are presented in Table 1. For the total sample, the means and SDs were 97.49 and 10.95 for the attitudes scale, and 18.16 and 3.67 for the knowledge scale, respectively. The same statistics were also computed for the undergraduate and graduate subsamples as well as males and females within each education subsample. As can be seen from Table 1, the range for the means was from 90.72 to 101.08 on the attitudes scale and from 17.41 to 19.05 on the knowledge scale for the various subgroups. A series of t-tests were conducted to detect possible differences due to sex or education level on the two scales. It was found that graduates scored significantly higher than undergraduates on both the attitudes, $t(318) = -3.36$, $p<.001$, and knowledge, $t(318) = -2.05$, $p<.01$, scales. Within each education level, females scored significantly higher than males on the attitudes scale (undergraduate level, $t(164) = -3.36$, $p<.001$; gradate level, $t(152) = -2.08$, $p<.01$), but not the knowledge scale. These results suggest that both education level and sex are related to attitudes toward and knowledge

about AIDS, though in different ways. Graduate students compared to their undergraduates tend to be more knowledgeable about AIDS and hold a more favorable/accepting attitude toward the disease as well as persons infected by HIV/AIDS. Sex was not a factor affecting the level of knowledge of AIDS for college students. However, sex significantly affects college students' attitudes toward AIDS at both graduate and undergraduate levels. Specifically, female students tend to hold a more appropriate attitude toward AIDS than do their male counterparts. This finding on sex difference is consistent to results of some previous studies and is noteworthy. For example, Goodwin and Roscoe (1988) found that male undergraduates were less accepting of homosexuality and more fearful of AIDS than female undergraduates.

Insert Table 1 about here

Cronbach's alpha coefficients were calculated to examine the internal consistency of the scales. The results are shown in Table 2. The reliability estimates

for the total sample were .81 for the attitudes scale and .80 for the knowledge scale. The ranges of the coefficients for the different subsamples were .78 to .86 for the attitudes scale and .76 to .84 for the knowledge scale. The reliabilities for undergraduate and graduate subsamples, as well as for the male and female subsamples within each education level, were statistically compared using Feldt's (1969) F-test of equality. No significant differences in the alpha coefficients were found due to sex or level of eduction (all $p > .05$). In general, the reliabilities were high and comparable across the various subsamples.

Insert Table 2 about here

The data were then analyzed to examine the relationships between the attitudes and knowledge scales. Table 3 displays the results for the total and various subsamples. Moderate correlations in the range of .40s (all $p<.001$) were consistently found between the two scales, with one exception of .59 ($p<.001$) for the female graduate subsample. These results indicate

knowledge of AIDS accounts approximately 20-30% of the variance in attitudes toward AIDS. It is a substantial factor to consider in efforts designed to change a person's attitudes toward the AIDS epidemic. However, the present correlations also suggest that knowledge alone is an insufficient factor in determining attitudes toward AIDS.

Insert Table 3 about here

In addition, 52 undergraduate students from the sample were administered the ATAS twice in order to investigate the test-retest reliability of the scales. The time interval between test and retest ranged between two to three weeks. Stability coefficients for the attitudes and knowledge scales were .74 and .82, respectively. Further, difference scores for the two administrations were tested using a correlated t-test. No significant difference was found ($p > .05$). Both the attitudes and knowledge scores did not change significantly between the two administrations.

Overall, the results of the present study indicate

that both the attitudes and knowledge scales of the ATAS have adequate internal consistency and test-retest reliability for college students. The items on the two scales were internally consistent, and the scores are relatively stable as measures of attitudes toward AIDS and knowledge about AIDS. Further, evidence on content validity of the ATAS is also provided as the scales were developed through a content validation procedure and all items were selected on a priori ground and judged by AIDS experts as appropriate measures of knowledge of and attitudes toward AIDS. Given the present findings, it is believed that the ATAS provides the field an adequate instrument for conducting research on AIDS and for evaluating the effectiveness of AIDS education/prevention efforts, among other uses.

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Appendix

ATAS Items Statements

Attitudes Scale

1. There is no need for the average person to become concerned about AIDS.
2. The names of individuals with AIDS should be kept confidential in order to protect them against discrimination.
3. If it's meant to be that I get AIDS there's nothing I can do to prevent getting the disease.
4. More government funds should be spent on providing support services for people with AIDS.
5. I would avoid having contact with persons who have AIDS.
6. A doctor should have the right to decide if he or she wants to treat patients with AIDS.
7. I would feel embarrassed if one of my family members had AIDS.
8. It's important to exercise safety precautions in one's sex behaviors in order to prevent AIDS.
9. Children with AIDS should be allowed to attend school with children who don't have AIDS.
10. There should be separate public facilities (i.e., rest room toilets) for people with AIDS.

11. Prevention of AIDS is the responsibility of individual persons rather than the society.
12. Everyone should be tested for HIV/AlDS infection.
13. AIDS is the omnipotent's way of punishing homosexuals.
14. Everybody should know something about AIDS.
15. Reckless intravenous drug users should change their drug use habits in order to prevent AIDS.
16. Persons with AIDS deserve support from their families and community.
17. An employee who has AlDS should not be allowed to work.
18. I have great sympathy for people who suffer from AIDS or AIDS related diseases.
19. Knowing more about AlDS will cause less fear about the disease.
20. Children should be educated about AlDS to protect them through their lives.
21. A doctor may inform, without the consent of the AlDS patient, a sexual partner that he or she is at risk of HlV infection.
22. Only unfit mothers have children with AlDS.
23. AIDS can be prevented by taking proper procedures.
24. Research on AIDS should be a priority for government funding.
25. I often read and listen to information about AIDS.

Knowledge Scale

1. Hemophiliacs can get AIDS.
2. AIDS is an epidemic.
3. Only homosexuals get AIDS.
4. The virus that causes AIDS is called Human Immunodeficiency Virus (HlV).
5. The AIDS virus can remain infectious outside the body for up to ten days if it is at room temperature.
6. One can get AIDS by sharing a meal with a person who has AlDS.
7. People who have AlDS do not develop cancer.
8. Today blood supply in hospitals and blood donation centers is screened for AlDS virus.
9. Impaired memory and concentration and motor deficits may occur in some AlDS patients.
10. One can get AIDS by sharing drug needles.
11. AIDS virus may live in the human body for years before symptoms appear.
12. One can get AIDS from receiving blood or sperm from a donor who has AlDS.
13. By using a condom when having sex, one is always safe from contracting AlDS.
14. The HIV test is a blood test which can tell if a person has AlDS.

15. There is a cure for AIDS.
16. AIDS victim may show extreme tiredness, night sweats, fever, weight loss, diarrhea, etc.
17. One can get AIDS by having sexual intercourse with an infected person.
18. AIDS is spread by sneezing, coughing, or touching.
19. AZT is the only drug approved by the U.S. Food and Drug Administration for the treatment of AIDS.
20. One can get AIDS by having sex with someone who uses intravenous drugs.
21. AIDS can be spread by having contact with towels or bed linens used by a person with AIDS.
22. An infected mother can give the AIDS virus to the baby during pregnancy and/or through breast feeding.
23. About 400,000 people in the United States are infected with the HIV virus.
24. Blacks and Hispanics show higher incidence rates of AIDS than other ethnic groups.
25. More women than men have been infected by the AIDS virus.

Table 1

Means and Standard Deviations for the Attitudes and Knowledge Scales

Subjects	Attitudes		Knowledge	
	M	SD	M	SD
Undergraduate	96.15	10.87	17.75	3.56
Male	90.72	10.88	17.41	4.53
Female	98.40	10.12	17.87	3.18
Graduate	99.40	10.44	18.79	3.53
Male	96.58	11.84	19.05	3.39
Female	101.08	9.20	18.61	3.64
Total	97.49	10.95	18.16	3.67

Table 2

Alpha coefficients for the Attitudes and Knowledge Scales

Subjects	Attitudes	Knowledge
Undergraduate	.81	.80
Male	.79	.84
Female	.82	.77
Gradate	.82	.81
Male	.86	.76
Female	.78	.83
Total	.81	.80

Table 3

Correlations Between the Attitudes and Knowledge Scales

Subjects	r*
Undergraduate	.44
Male	.46
Female	.43
Graduate	.48
Male	.41
Female	.59
Total	.47

*all $p < .001$